

## CLAIMS

1. An ultrasonic Doppler blood flow measurement device comprising:
  - an ultrasonic wave send/receive section that sends ultrasonic  
5 pulses into an object to be examined and receives ultrasonic pulse echoes  
that are reflected from inside the object;
  - a phase detection section that detects components that have  
undergone Doppler transition from among the ultrasound pulse echoes  
and takes these as detection signals;
  - 10 a first memory section that is constituted by a memory that has a  
two-dimensional address space and different data read/write speeds in a  
row direction and a column direction of the address space, and that stores  
the detection signals;
  - a blood flow information computation section that calculates blood  
15 flow information from the detection signals;
  - a second memory section that is constituted by a memory that has  
a capacity that is smaller than that of the first memory section but is at  
least the capacity of a data amount required for the blood flow  
information computation section to compute any one depth point of the  
20 object, and that stores the detection signals used for the computation by  
the blood flow information computation section; and
  - a data transfer section that performs data transfer from the first  
memory section to the second memory section in only the direction, of the  
row direction and the column direction of the address space of the first  
25 memory section, that has the faster data read/write speed.
2. The ultrasonic Doppler blood flow measurement device according  
to claim 1,
  - wherein the second memory section is a memory having a capacity  
30 that is at least double the data amount necessary for the blood flow  
information computation section to compute any one depth point of the  
object; and
  - wherein the data transfer section transfers the detection signals  
used for computing at least two points with the blood flow information  
35 computation section from the first memory section to the second memory  
section.

3. The ultrasonic Doppler blood flow measurement device according to claim 1 or 2,  
wherein the first memory section is constituted by a DRAM or a SDRAM.
- 5 4. The ultrasonic Doppler blood flow measurement device according to any one of claims 1 to 3,  
wherein the second memory section is constituted by a SRAM.
- 10 5. The ultrasonic Doppler blood flow measurement device according to any one of claims 1 to 3,  
wherein the blood flow information computation section, the second memory section, and the data transfer section are mounted on a single hardware unit; and  
15 wherein the first memory section is provided as an external memory of the hardware unit.
6. The ultrasonic Doppler blood flow measurement device according to claim 5,  
20 wherein the operations of the blood flow information computation section and the data transfer section are controlled by a program.
7. The ultrasonic Doppler blood flow measurement device according to claim 5 or 6,  
25 wherein the blood flow information computation section and the data transfer section are constituted by separate computation processing circuits; and  
wherein each computation processing circuit has a direct memory access function with respect to the second memory section.
- 30 8. A program that controls the operations of the blood flow information computation section and the data transfer section in the ultrasonic Doppler blood flow measurement device according to claim 6, the program being for executing on the blood flow information  
35 computation section and the data transfer section:  
a process of transferring signals that have been input to the hardware unit to the first memory section;

a process of determining whether a data amount of the first memory section exceeds a data amount necessary for the blood flow information computation section to compute any one depth point of an object to be examined;

5           a process of performing data transfer from the first memory section to the second memory section, in a case where the result of the determination process is positive, in only the direction, of the row direction and the column direction of the address space of the first memory section, that has the faster data read/write speed; and

10           a process of causing the blood flow information computation section to perform computation using the signals stored on the second memory section.

9.       A recording medium storing a program that controls the  
15       operations of the blood flow information computation section and the data transfer section in the ultrasonic Doppler blood flow measurement device according to claim 6, the program executing on the blood flow information computation section and the data transfer section:

20           a process of transferring signals that have been input to the hardware unit to the first memory section;

a process of determining whether a data amount of the first memory section exceeds a data amount necessary for the blood flow information computation section to compute any one depth point of an object to be examined;

25           a process of performing data transfer from the first memory section to the second memory section, in a case where the result of the determination process is positive, in only the direction, of the row direction and the column direction of the address space of the first memory section, that has the faster data read/write speed; and

30           a process of causing the blood flow information computation section to perform computation using the signals stored on the second memory section.